The risk and consequences of salmonella infection in sickle cell disease are well established, though patients' susceptibility to this micro-organism remains unexplained. Simple preventive measures, however, may limit exposure to the micro-organism. We recommend that all patients with sickle cell disease who develop diarrhoea are investigated for infection with *Salmonella* spp and given antibiotics. If Gram negative bacteraemia is found to be present an antibiotic that is effective in salmonella infection should be started. Other measures to reduce the risk of salmonellosis—for example, the provision of education about scrupulous food hygiene and information on food sources of salmonella—should also be taken.

M R WORKMAN
Senior registrar in microbiology
J PHILPOTT-HOWARD
Senior lecturer in microbiology
A J BELLINGHAM
Professor haematology

King's College School of Medicine and Dentistry,
London SE5 9PJ

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Under half of doctors know that antibiotic prophylaxis should be life long

EDITOR,—Despite several articles in the medical press over the past two years, including communications to all doctors from the chief medical officer, we were dismayed to note that several elderly patients admitted to our wards who had had splenectomies years previously had not been given advice on prophylaxis against infection or relevant immunisation. Deodhar *et al* found that in 184 patients who had had a splenectomy during a 12 year period 58% had not received advice or prophylaxis against infection and only 36% had received pneumococcal vaccination.[1]

We recently assessed doctors' knowledge of prophylaxis after splenectomy by means of a questionnaire survey An anonymous questionnaire was sent to 160 hospital doctors of all grades and 200 general practitioners. A total of 118 questionnaires was returned for analysis (69 (43%) by the hospital doctors and 49 (25%) by the general practitioners). Most of the doctors (116/118) knew that patients who had had a splenectomy were at risk of pneumococcal infection. However, only half (34) of the hospital doctors and a third (16) of the general practitioners knew that patients were at risk of meningococcal infection and malaria. Most of the respondents (50 (72%) of the hospital doctors and 27 (55%) of the general practitioners) knew about the risk of *Haemophilus influenzae* infection. Although there was general awareness about antibiotic prophylaxis, only seven (14%) of the general practitioners and 34 (49%) of the hospital doctors knew that this prophylaxis should be life long.

Six of the general practitioners had a computerised splenectomy register, and 20 said that they would like more advice and information on managing patients who had had a splenectomy. The general practitioners had (to their knowledge) a total of 107 patients who had had a splenectomy registered with their practices; the commonest reasons for the operation were trauma, idiopathic thrombocytopenic purpura, and lymphoma.

Awareness and implementation of guidelines for preventing and treating infection in patients with reduced or absent splenic function is essential.[2] This could be helped by the setting up of computer databases on patients. The guidelines in our district are accessible on the pathfinder system, which is a computerised information system available in our hospital and to a number of general practitioners. Hopefully, this system will become available to all general practitioners; the guidelines and other information would then be easily accessible.

A A PALEJWALA
Medical registrar
L Y C HONG
Senior house officer in general medicine
D KING
Consultant geriatrician

Department of Medicine for the Elderly,
Wirral Hospital,
Upton,
Wirral,
Merseyside L49 5PE

1 Deodhar HA, Marshall U, Barnes JN. Increased risk of sepsis after splenectomy. *BMJ* 1993;**307**:1408-9.
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Patients expect splenectomy in rural Zaire

EDITOR,—The working party of the British Committee for Standards in Haematology's Clinical Task Force has produced comprehensive guidelines on preventing and treating infection in patients with an absent or dysfunctional spleen.[1] Massive splenomegaly is common in north east Zaire, mainly owing to the occurrence of the tropical splenomegaly syndrome in a region holoendemic for falciparum malaria. Patients with this syndrome present in the outpatient department with pain and a large mass extending from the lower left costal margin. They expect the hospital to perform a splenectomy to relieve their discomfort.

Splenectomy is dangerous here because facilities for blood transfusion are limited. The seroprevalence of HIV in our region is roughly 7%,[2] so the procedure carries an appreciable risk for the surgeon. The risks of overwhelming infection after splenectomy are high as vaccination against *Streptococcus pneumoniae* and *Haemophilus influenzae* infections is not possible. Lifelong prophylaxis with oral phenoxymethylpenicillin and chloroquine is difficult to assure as the population is mobile and patients may live beyond the reach of even basic medical facilities.

In view of these difficulties splenectomy should be performed only if the patient's life is in danger—that is, for splenic trauma with uncontrolled haemorrhage or hypersplenism with severe anaemia (haemoglobin concentration less than 50 g/l with symptoms of anaemia). Splenic tissue should be conserved when possible and the patient informed of the need to take lifelong antibiotic and malarial prophylaxis.

The main role of doctors in this region with regard to splenectomy is to educate patients and dissuade them from having the operation except in life threatening situations. Instead of operating we should be providing simple analgesia for the pain and treating the tropical splenomegaly syndrome with long term antimalarial drugs.

JUSTIN BURDON

Centre Médical Evangelique,
Nyankunde, Zaire
c/o PO Box 21285,
Nairobi, Kenya

1 Working Party of the British Committee for Standards in Haematology Clinical Haematology Task Force. Guidelines for the prevention and treatment of infection in patients with an absent or dysfunctional spleen. *BMJ* 1996; **312**:430-4. (17 February.)
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Data linkage is useful in setting up a register

EDITOR,—We wish that the guidelines on preventing and treating infection in patients with an absent or dysfunctional spleen[1] had included advice on ways of ensuring that all patients at risk are contacted and reminded about the need to carry a splenectomy card and other precautionary measures. One way of doing this is by means of a register.

Grampian Health Board has established a register of patients who have had a splenectomy since 1984. This was coordinated by the department of public health medicine as part of its monitoring of and advice on immunisation. Patients were identified from both routine hospital discharge data and pathology records because of concern about the completeness of these sources of data.[2 3] Many patients die shortly after splenectomy because of underlying disease. To minimise the work in establishing the register, linkage of hospital discharge data and death certificates[4] by the information and statistics division of the Common Services Agency, Edinburgh, was used to exclude patients who had died. This excluded 98 of the 315 patients initially identified.

For efficient identification of patients at risk we recommend using discharge data, pathology records, and data linkage supplemented by additional information from general practitioners and hospital clinicians. Local data linkage with the community health index can then be used to help keep such a register up to date.

We thank S Kendrick for supplying the data linked information.

HELEN HOWIE ANN F BISSET
Registrar Senior registrar

Department of Public Health Medicine,
Grampian Health Board,
Aberdeen AB9 1RE

1 Working Party of the British Committee for Standards in Haematology Clinical Haematology Task Force. Guidelines for the prevention and treatment of infection in patients with an absent or dysfunctional spleen. *BMJ* 1996;**312**:430-4. (17 February.)
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Uncertainty exists over frequency of blood tests to test antipneumococcal immunity

EDITOR,—I wonder whether the British Committee for Standards in Haematology would comment on the level of antibody to pneumococcus that indicates protection against infection in patients who have had a splenectomy and have received pneumococcal vaccine.[1] General practitioners need further guidance on the frequency of blood tests to assess immunity to pneumococcal infection in these patients. Should we first test six weeks after vaccination, then three years later, and thereafter every year?

G C KASSIANOS
General practitioner

Birch Hill Medical Centre,
Leppington,
Bracknell,
Berkshire RG12 7WW

1 Working Party of the British Committee for Standards in Haematology Clinical Haematology Task Force. Guidelines for the prevention and treatment of infection in patients with an absent or dysfunctional spleen. *BMJ* 1996;**312**:430-4. (17 February.)

Is there evidence to show that daily antibiotic treatment is best?

EDITOR,—The recent guidelines on preventing and managing infection in patients with an absent or dysfunctional spleen recommend lifelong prophylaxis with oral antibiotics for all

patients who have undergone splenectomy.[1] People who receive this advice may ask about their baseline risk of dangerous sepsis, how this will be reduced by taking medicine every day, and other options for prevention.

The risk of serious infection after splenectomy varies according to indication, age, and underlying disease; sepsis occurs despite prophylaxis, and compliance is often poor.[2 3] How does the committee recommend we interpret these facts for our patients? The committee quotes work by Cummins *et al*[4]; our understanding of this work is that it focuses exclusively on children with sickle cell disease and concludes that less than half of them took prophylaxis. The committee also quotes literature stating that the incidence of severe sepsis late after splenectomy is so rare as to make the efficacy of prophylactic antibiotics impossible to evaluate statistically.[2] Furthermore, the committee offers no evidence to contradict an established recommendation that for lower risk groups (such as adults who have lost their spleens through trauma) the preferred (and less burdensome) management is early recognition and treatment with a ready supply of amoxycillin.[2 3]

In this age of evidence based medicine and interest in individualised relative risks, experts who interpret research and set guidelines should focus on what is likely to be most useful to the clinicians and patients who are expected to implement the guidelines.[5] Is the committee aware of good evidence that the balance of risk is better in patients who take antibiotics daily than in those in whom an approach involving early recognition of infection and early treatment is adopted? If this recommendation is based mainly on expert opinion, is there any way of establishing the relative risks for each approach, given the small numbers and rare events?

CHRIS BUTLER
Lecturer in general practice
PAUL KINNERSLEY
Senior lecturer in general practice
University of Wales College of Medicine,
Llanedeyrn Health Centre,
Cardiff CF3 7PN

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Guidelines do not discuss resistance to antibiotics among pneumococci

EDITOR,—The guidelines on preventing and treating infection in patients with an absent or dysfunctional spleen do not discuss the impact of current changes in patterns of resistance to antibiotics among pneumococci.[1] The few and perfunctory phrases mentioning the problem are supported by a seven year old reference. Since then, resistance to penicillin and other antibiotics has steadily increased, with large variations among countries. The most recent figures for England and Wales (for 1994) from the Communicable Disease Surveillance Centre show that 2.5% of strains of pneumococci are resistant to penicillin (about half of these are highly resistant) and 11.2% are resistant to erythromycin.[2] A recent review shows the widespread nature of the problem, with rates of resistance to penicillin as high as 36%.[3]

The association between a high rate of resistance to penicillin and failure of treatment is established only for meningitis and otitis media, but whether penicillin can be regarded as suitable treatment for life threatening pneumococcal septicaemia caused by highly resistant strains remains uncertain. I would be reluctant to accept penicillin as the agent of first choice in such a situation. The question is given greater urgency because patients who have previously received penicillin, such as those receiving long term prophylaxis, are more likely to carry a resistant strain.[3]

The link between use and resistance is even more closely established for erythromycin, and resistant strains of pneumococci are commonly found in populations exposed to this antibiotic. For this reason I question the wisdom of long term prophylaxis with erythromycin in patients who are allergic to penicillin. If, however, such a policy were to be followed the suggestion that the dose of erythromycin should be increased in the event of febrile illness is dangerous, since these patients are the ones most likely to carry a resistant strain. Pneumococcal septicaemia associated with asplenia can take a devastatingly rapid course, and there are no second chances in the choice of antibiotic.

The working party that drew up the guidelines makes a particular point of its review of the literature and methods of developing the guidelines. An additional, more basic approach, such as telephoning a few people familiar with these problems (infectious diseases physicians, paediatricians, and the relevant department at the Communicable Disease Surveillance Centre), would have prevented such egregious errors and omissions.

H P LAMBERT
Emeritus professor of microbial diseases
Department of Clinical Sciences,
London School of Hygiene and Tropical Medicine,
London WC1E 7HT

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Working party's reply

EDITOR,—As M R Workman and colleagues state, the high susceptibility to salmonella infection among patients with sickle cell disease remains unexplained. Because there is no evidence to link this with hyposplenism the guidelines do not refer to the problem.

Our guidelines are part of the drive to increase the education of health professionals, and A A Palejwala and colleagues' study indicates that this need is greatest in general practice. Palejwala and colleagues and Helen Howie and Ann F Bisset point out the advantages of computerised data systems. We are aware of several regional registers and acknowledge the usefulness of data linkage.

G C Kassianos requests information on the level of antibody that provides protection against pneumococcal infection. This level is not known. The need for reimmunisation and the timing of the next dose may be determined by measuring antibodies to pneumococcus before and one month after immunisation and then at three and five years, especially in patients at highest risk. Reactions to the vaccine can be minimised by avoiding reimmunisation of patients with high circulating levels of antibody. Patients with poor or absent antibody responses should be targeted for (lifelong) antibiotic prophylaxis.

Chris Butler and Paul Kinnersley question the recommendation that prophylactic antibiotics (oral phenoxymethylpenicillin or an alternative) should be offered life long. We agree that most of the published evidence suggesting a protective effect of phenoxymethylpenicillin refers to children with sickle cell disease.[1] Although overwhelming infection in otherwise healthy asplenic adults is rare, *Streptococcus pneumoniae* is the most likely pathogen, and in Britain it remains highly sensitive to penicillin. We recognise that many adults may not accept lifelong antibiotic prophylaxis. Our additional suggestion that patients should keep amoxycillin or a macrolide antibiotic at home to be used at the first sign of possible infection could well apply to such patients. To establish the relative risks and benefits of each approach it might be possible to recruit patients into a study, matching for age, sex, and reasons for and time since splenectomy. A national study is more likely to provide meaningful results but would depend on the creation of regional and national registers.

H P Lambert takes us to task for dealing superficially with the problem of resistance to antibiotics. Because of the small number of patients taking prophylaxis the impact of these recommendations on patterns of resistance is likely to be low. Resistance to penicillin and erythromycin is certainly a cause for concern. Because of this risk the guidelines recommend cefotaxime or ceftriaxone as empirical treatment for patients taking antibiotic prophylaxis. Patients who are allergic to both penicillin and cephalosporins may be given chloramphenicol.

Lambert should note that the working party included a medical microbiologist and a paediatrician, and advice was sought from the Communicable Disease Surveillance Centre and an infectious disease physician. The guidelines took over two years to prepare because of the extensive consultation that took place and the need to negotiate the *BMJ*'s review system.

G P SUMMERFIELD
Consultant haematologist
Middlesbrough General Hospital,
Middlesbrough TS5 5AZ
J G SMITH
Consultant haematologist
Royal United Hospital,
Bath BA1 3NG
P BADDELEY
General practitioner
Stroud GL6 6RU
R BARNES
Medical microbiologist
University of Wales College of Medicine,
Cardiff CF4 4XN
J LORTAN
Consultant immunologist
St Charles's Hospital,
London W10 6DZ

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Testing to check success of treatment to eradicate *H pylori*

Patients' wellbeing should not be risked for marginal cost savings

EDITOR,—Perminder S Phull and colleagues suggest that dyspeptic symptoms are good at predicting a successful outcome of treatment to eradicate *Helicobacter pylori* in patients with duodenal ulcer.[1] Other published data, however, have shown that recurrent dyspepsia in patients with duodenal ulcer who are cured of *H pylori* infection is not as rare as the authors' results suggest.[2 3] In one study, in which 207 patients with ulcer were followed up for a median of 250 days after treatment, 31% of those who were